

CLAIMS:

1. A transport apparatus comprising,
a moveable support frame;
a plurality of casters supporting the support frame;
5 a traction device coupled to the support frame;
a traction device mover including an actuator configured to move the traction device between a first position spaced apart from the floor and a second position in contact with the floor;
an external power detector, the external power detector being operable
10 to determine if external power is supplied to the transport apparatus and provide a power indication signal in response thereto;
a caster mode detector, the caster mode detector being operable to detect a mode of operation of the casters and provide a caster indication signal in response thereto; and
15 a controller coupled to the external power detector to receive the power indication signal therefrom and coupled to the caster mode detector to receive the caster indication signal therefrom, the controller being operable to provide a control signal to the actuator in response to the power indication signal and the caster indication signal.
- 20 2. The transport apparatus of claim 1, wherein each caster is supported for swiveling movement and includes a rotatable wheel, a brake configured for inhibiting rotation of the wheel in a brake mode of operation, and a steer lock for inhibiting swiveling movement of the caster in a steer mode of operation, the control
25 signal from the controller instructing the actuator to position the traction device in the first position when the caster mode detector fails to detect the steer mode of operation.
3. The transport apparatus of claim 2, further comprising a linkage operably coupling the plurality of casters, the caster mode detector including a limit switch supported by the support frame and configured to be actuated by the linkage when the casters are in the steer mode of operation.
- 30 4. The transport apparatus of claim 1, wherein each caster is supported for swiveling movement and includes a rotatable wheel, a brake configured for inhibiting rotation of the wheel in a brake mode of operation, and a steer lock for inhibiting swiveling movement of the caster in a steer mode of operation, the control

signal from the controller instructing the actuator to position the traction device in the second position when the caster mode detector detects the steer mode of operation and the external power detector detects no external power connected.

5 5. The transport apparatus of claim 1, wherein the external power detector is configured to detect alternating current supplied from an external power source.

6. The transport apparatus of claim 1, further comprising an enable input device being operable to receive an enable command from a user and provide an enable signal to the controller in response to the enable command.

10 7. The transport apparatus of claim 6, wherein the controller prevents the actuator from moving the traction device from the first position to the second position in response to the enable signal.

15 8. The transport apparatus of claim 7, further comprising a motor coupled to the traction device, the motor being configured not to rotate the shaft in the absence of the enable signal.

 9. The transport apparatus of claim 1, further comprising:
 a motor coupled to the traction device;
 a first user input device, the first user input device being operable to receive a first input from a user and provide a first signal based on the first input;
20 a second user input device, the second user input device being operable to receive a second input from a user and provide a second signal based on the second input; and

 a speed controller coupled to the first user input device to receive the first signal therefrom and coupled to the second user input device to receive the second signal therefrom, the speed controller being operable to provide a control signal based on a sum of the first signal and the second signal to command the motor to operate at a specific output based on the control signal.

25 10. The transport apparatus of claim 1, wherein the traction device includes a rolling support having a rotating member configured to rotate about an axis of rotation and provide mobility to the moveable support frame, and the traction device mover is configured to pivot the rolling support about a pivot axis between the first and second positions, the pivot axis of the rolling support being coaxial with the axis of rotation of the rotating member.

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11. The transport apparatus of claim 10, wherein the traction device mover includes a rolling support mount and a resilient link operably coupled to the rolling support mount and the actuator, the rolling support being supported by the rolling support mount, the actuator being configured to move the link substantially horizontally such that the rolling support mount and the rolling support move between the first and second positions.

12. A transport apparatus comprising:

a moveable support frame;

a mattress supported by the support frame to provide a patient rest surface;

a plurality of casters supporting the support frame, each caster being supported for swiveling movement and including a rotatable wheel, a brake configured for inhibiting rotation of the wheel in a brake mode of operation, and a steer lock for inhibiting swiveling movement of the caster in a steer mode of operation;

a traction device coupled to the support frame;

an actuator configured to move the traction device between a first position spaced apart from the floor and a second position in contact with the floor;

a caster mode detector configured to detect at least one of the brake mode of operation and the steer mode of operation of the casters and to provide a caster indication signal in response thereto; and

a traction engagement controller coupled to the caster mode detector to receive the caster indication signal therefrom, the traction engagement controller being configured to provide a control signal to the actuator in response to the caster indication signal.

13. The transport apparatus of claim 12, further comprising an external power detector configured to determine if external power is supplied to the transport apparatus and to provide a power indication signal in response thereto, the traction engagement controller being configured to provide the control signal in response to the power indication signal and the caster indication signal.

14. The transport apparatus of claim 13, wherein the control signal from the traction engagement controller instructs the actuator to position the traction device in the second position when the caster mode detector detects the steer mode of operation and the external power detector detects no external power connected.

5 15. The transport apparatus of claim 12, further comprising a linkage operably coupling the plurality of casters, the caster mode detector including a limit switch supported by the support frame and configured to be actuated by the linkage when the casters are in the steer mode of operation.

10 16. The transport apparatus of claim 12, further comprising an enable input device being operable to receive an enable command from a user and provide an enable signal to the controller in response to the enable command.

17. The transport apparatus of claim 16, wherein the traction engagement controller prevents the actuator from moving the traction device from the first position to the second position in response to the enable signal.

15 18. The transport apparatus of claim 17, further comprising a motor coupled to the traction device, the motor being configured not to rotate the shaft in the absence of the enable signal.

19. The transport apparatus of claim 12, further comprising:
a motor coupled to the traction device;
20 a first user input device, the first user input device being operable to receive a first input from a user and provide a first signal based on the first input;
a second user input device, the second user input device being operable to receive a second input from a user and provide a second signal based on the second input; and
25 a speed controller coupled to the first user input device to receive the first signal therefrom and coupled to the second user input device to receive the second signal therefrom, the speed controller being operable to provide a control signal based on a sum of the first signal and the second signal to command the motor to operate at a specific output based on the control signal.

30 20. A transport apparatus comprising:
a moveable support frame;
a mattress supported by the support frame to provide a patient rest surface;

a plurality of casters supporting the support frame;
a traction device coupled to the support frame;
an actuator configured to move the traction device between a first
position spaced apart from the floor and a second position in contact with the floor;
5 an external power detector being configured to determine if external
power is supplied to the transport apparatus and provide a power indication signal in
response thereto; and
a traction engagement controller coupled to the external power detector
to receive the power indication signal therefrom, the traction engagement controller
10 being configured to provide a control signal to the actuator in response to the power
indication signal.

21. The transport apparatus of claim 20, further comprising a caster mode
detector configured to detect a mode of operation of the casters and provide a caster
indication signal in response thereto.

15 22. The transport apparatus of claim 21, wherein each caster is supported
for swiveling movement and includes a rotatable wheel, a brake configured for
inhibiting rotation of the wheel in a brake mode of operation, and a steer lock for
inhibiting swiveling movement of the caster in a steer mode of operation, the control
signal from the controller instructing the actuator to position the traction device in the
20 second position when the caster mode detector detects the steer mode of operation and
the external power detector detects no external power connected.

23. The transport apparatus of claim 20, wherein the external power
detector is configured to detect alternating current supplied from an external power
source.

25 24. The transport apparatus of claim 20, further comprising an enable input
device being operable to receive an enable command from a user and provide an
enable signal to the controller in response to the enable command.

25. The transport apparatus of claim 24, wherein the controller prevents
the actuator from moving the traction device from the first position to the second
30 position in response to the enable signal.

26. The transport apparatus of claim 25, further comprising a motor
coupled to the traction device, the motor being configured not to rotate the shaft in the
absence of the enable signal.

27. The transport apparatus of claim 20, further comprising:

a motor coupled to the traction device;

a first user input device, the first user input device being operable to receive a first input from a user and provide a first signal based on the first input;

5 a second user input device, the second user input device being operable to receive a second input from a user and provide a second signal based on the second input; and

a speed controller coupled to the first user input device to receive the first signal therefrom and coupled to the second user input device to receive the second signal therefrom, the speed controller being operable to provide a control signal based on a sum of the first signal and the second signal to command the motor to operate at a specific output based on the control signal.

28. A transport apparatus comprising:

a moveable support frame;

15 a plurality of casters supporting the support frame, each caster being supported for swiveling movement and including a rotatable wheel, a brake configured for inhibiting rotation of the wheel in a brake mode of operation, and a steer lock for inhibiting swiveling movement of the caster in a steer mode of operation;

20 a traction device coupled to the support frame;

an actuator configured to move the traction device between a first position spaced apart from the floor and a second position in contact with the floor;

25 an external power detector configured to determine if external power is supplied to the transport apparatus and provide a power indication signal in response thereto;

a caster mode detector configured to detect at least one of the brake mode of operation and the steer mode of operation of the casters and to provide a caster signal indication signal in response thereto;

30 an enable input device being operable to receive an enable command from a user and provide an enable signal in response to the enable command; and

5 a controller coupled to the external power detector to receive the power indication signal therefrom, coupled to the caster mode detector to receive the caster indication signal therefrom, and coupled to the enable input device to receive the enable signal therefrom, the controller being operable to provide a control signal to the actuator in response to the power indication signal, the caster indication signal and the enable signal.